

## Original Research Article

# Morbidity Pattern Among Children Aged 3 to 6 Years Residing in an Urban Slum: A Cross-Sectional Study

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### ABSTRACT

**Background:** Children residing in urban slums face a wide range of health problems such as malnutrition, respiratory infections, and gastrointestinal problems. These health problems are driven by factors like poor sanitation, polluted water, limited access to the health care services, lack of proper nutrition and environmental hazards. These issues contribute to poor physical and cognitive development and increased morbidity among the children. The objective of this study was to observe the morbidity and its socio-demographic determinants among slum children.

**Material and Methods:** This cross-sectional study was conducted among children residing in an urban slum in Thane in January 2025 using complete enumeration technique. All the children aged 3 to 6 years residing in a defined urban slum were included in the study. Thorough clinical examination of the subjects was performed through house-to-house survey. Socio-demographic data and clinical examination findings were recorded in the proforma. Data was entered in Microsoft excel and statistically analyzed. Chi-square test was applied.

**Results:** Total 159 children were examined. 51.57% were females and 48.43% were males. 59.12% subjects had morbidity. Respiratory problems were the most frequent (44.03%). Morbidity did not show any statistically significant association with gender, age, religion, or class. It was slightly higher among males (59.74%), and among children aged 3-4 years (61.82%). Also, it was higher among Hindu children (64.29%). Across classes, morbidity was most common in Junior Kindergarten (71.43%), followed by Nursery (52.83%) and Senior Kindergarten (52.00%) ( $p>0.05$ ).

**Conclusion:** Understanding and addressing children's health in slum settings should be a priority for the health care services.

**Keywords:** Morbidity, Urban Slum Children

## INTRODUCTION

Healthy development of the children is of basic importance as per the constitution of the World Health Organization. Urbanization leads to the establishment of slums, which continue to lack sanitary facilities, safe drinking water, health care services, housing needs which pose as growing concerns.

Children from such settings are at risk of various forms of morbidities. Children from urban slums are at risk of malnutrition, respiratory infections and diarrheal diseases.<sup>1</sup> Rapid urbanization in the current century has been accompanied by the development of slums. Slums are the areas of broad health and social disadvantage to children due to extreme poverty, overcrowding, poor water

quality, sanitation issues, substandard housing, limited access to basic health care services. Due to problems of environmental sanitation in urban slums children staying there are at risk of vector-borne diseases.<sup>2</sup>

Disease is a common cause of slum children's crisis. But the type of health problem varies. Diarrhea, fever, cough, typhoid skin diseases, scabies, measles, ringworm, jaundice, eye disorders and dental complications are the main concerns among slum children. Seasonal variations in diseases of children are also common.<sup>3</sup> Children living in urban slums in India are exposed to chronic stressors that increase their risk of developing mental disorders, but they remain a neglected group.<sup>4</sup> There was a high burden of childhood diseases and malnutrition among urban slum dwellers in southern India. Frequent illnesses may adversely impact children's health and development, besides placing an additional burden on families who need to seek health care and find resources to manage illness.<sup>6</sup>

Slums are often unhealthy environment for populations as a whole and particularly for vulnerable groups like young children. These children living in urban slums are vulnerable to many health problems like malnutrition and subsequently poor health outcomes. Poor personal hygiene practices among slum children contributes to higher prevalence of skin infections. Few children from slums do not receive essential immunizations leaving them vulnerable to preventable diseases. Lack of awareness about healthy child care practices among parents or caretakers from slums contribute to morbidity among children.<sup>7</sup> Children are the wealth of any

nation as they constitute one of the essential segments of the population.<sup>8</sup>

Children living in urban slums are deprived from basic needs like health care services. Poor environmental sanitation and deficient nutrition adversely affect their growth and development. This makes them more vulnerable to infectious diseases. That is why a community-based study was conducted to assess the morbidity profile of the children aged 3 to 6 years residing in an urban slum and to determine some socio-demographic factors associated with it.

## MATERIAL AND METHODS

This was a cross-sectional study conducted among children aged 3 to 6 years residing in an urban slum in Thane in the month of January 2025. Necessary permissions and approvals were obtained. The informed consent from the parents or guardians of the children was obtained before commencement of the study. Inclusion and exclusion criteria were developed. All the children aged 3 to 6 years residing in a defined urban slum were included in the study. Pre-designed, pre-tested and semi-structured proforma was used to record the relevant data of the study subjects. Stethoscope, pencil torch, clinical thermometer etc. tools were used to examine the study participants by house-to-house survey.

Socio-demographic data of the subjects was recorded in the proforma with the help of their parents or guardians. Thorough clinical examination of the subjects was performed in a good day-light and the findings were recorded in the aforesaid proforma. Data was

entered in Microsoft excel and statistically analyzed. The categorical variables were presented as numbers and percentages. Chi-square test was used to compare the differences in the categorical variables. The statistical significance level was fixed at  $p < 0.05$ . All the children who were having health issues were referred to nearby tertiary health care hospital for treatment. Necessary health education was given to the parents and caregivers.

## RESULTS

A total of 159 children in the age group of 3 to 6 years were assessed clinically, with a mean age of  $3.89 \pm 1.15$  years (Range: 3-8 years, Median: 3.00 years). The mean age among females was  $4.03 \pm 1.16$  years, while that of males was  $3.75 \pm 1.12$  years. There was nearly equal gender distribution (51.57% females and 48.43% males). As shown in Table-1, the majority (69.18%) were aged 3-4 years, followed by 30.82% aged 5-6 years. More than half of the children belonged to the non-Hindu category (55.97%), and the rest were Hindu (44.03%). In terms of class distribution, 35.22% were enrolled in Junior Kindergarten, 33.33% in Nursery, and 31.45% in Senior Kindergarten.

**Table-1: Socio-demographic profile of the study participants (n=159)**

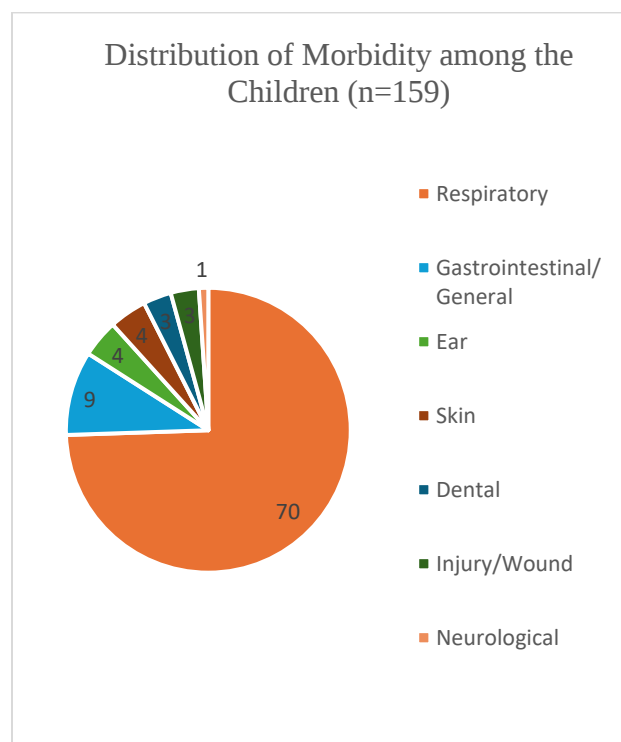
| Variable | Category | Frequency (n) | Percentage (%) |
|----------|----------|---------------|----------------|
| Gender   | Female   | 82            | 51.57          |
|          | Male     | 77            | 48.43          |
|          | 3-4      | 110           | 69.18          |

|              |         |    |       |
|--------------|---------|----|-------|
| Age in years | 5-6     | 49 | 30.82 |
| Religion     | Hindu   | 70 | 44.03 |
|              | Other   | 89 | 55.97 |
| Class        | Nursery | 53 | 33.33 |
|              | Jr. Kg  | 56 | 35.22 |
|              | Sr. Kg  | 50 | 31.45 |

As seen in Table-2, among the 159 children assessed, 59.12% had morbidity, while 40.88% had no morbidity. Respiratory conditions were the most frequent (44.03%), followed by gastrointestinal problems (05.66%), ear-related complaints (02.52%), skin conditions (02.52%), dental issues (01.89%), injuries/wounds (01.89%), and neurological problems (00.63%) highlighted in Figure-1.

**Table-2: Morbidity Distribution among the Children (n=159)**

| Variable  | Category         | Frequency (n) | Percentage (%) |
|-----------|------------------|---------------|----------------|
| Morbidity | Present          | 94            | 59.12          |
|           | Absent           | 65            | 40.88          |
| Morbidity | Respiratory      | 70            | 44.03          |
|           | Gastrointestinal | 09            | 05.66          |
|           | Ear              | 04            | 02.52          |
|           | Skin             | 04            | 02.52          |
|           | Dental           | 03            | 01.89          |
|           | Injury           | 03            | 01.89          |
|           | Neurological     | 01            | 00.63          |



**Figure-1: Distribution of Morbidity among the Children (n=159)**

Morbidity status did not show any statistically significant association with gender, age, religion, or class. As presented in Table-3, morbidity was slightly higher among males (59.74%) compared to females (58.54%), and among children aged 3-4 years (61.82%) compared to those aged 5-6 years (53.06%). Morbidity prevalence was higher in Hindu children (64.29%) compared to non-Hindu children (55.06%). Across classes, morbidity was most common in Junior Kindergarten (71.43%), followed by Nursery (52.83%) and Senior Kindergarten (52.00%). However, these differences were not statistically significant ( $p > 0.05$ ).

**Table-3: Association of Morbidity with Demographic Characteristics (n=159)**

| Variable | Category          | Morbidity     |              | Chi-Square | p-value |
|----------|-------------------|---------------|--------------|------------|---------|
|          |                   | Present n (%) | Absent n (%) |            |         |
| Gender   | Female (n=82)     | 48 (58.54)    | 34 (41.46)   | 0.024      | 0.877   |
|          | Male (n=77)       | 46 (59.74)    | 31 (40.26)   |            |         |
| Age      | 3-4 years (n=110) | 68 (61.82)    | 42 (38.18)   | 1.06       | 0.301   |
|          | 5-6 years (n=49)  | 26 (53.06)    | 23 (46.94)   |            |         |
| Religion | Hindu (n=70)      | 45 (64.29)    | 25 (35.71)   | 1.381      | 0.240   |
|          | Other (n=89)      | 49 (55.06)    | 40 (44.94)   |            |         |
| Class    | Nursery (n=53)    | 28 (52.83)    | 25 (47.17)   | 5.427      | 0.066   |
|          | Jr. Kg (n=56)     | 40 (71.43)    | 16 (28.57)   |            |         |
|          | Sr. Kg (n=50)     | 26 (52.00)    | 24 (48.00)   |            |         |

## DISCUSSION

Total 159 children in the age group of 3 to 6 years were examined clinically, with a mean age of  $3.89 \pm 1.15$  years. The mean age

among females was  $4.03 \pm 1.16$  years, while that of males was  $3.75 \pm 1.12$  years. There were nearly equal gender distribution (i.e. 51.57%) females and 48.43% males. The majority (i.e. 69.18%) children were aged 3-4 years, followed by 30.82% aged 5-6 years. More than half (i.e. 55.97%) of the children belonged to the non-Hindu category, and the rest (i.e. 44.03%) were Hindu. In terms of class distribution, 35.22% were enrolled in Junior Kindergarten, 33.33% in Nursery, and 31.45% in Senior Kindergarten.

We observed, among the 159 children assessed, 59.12% had morbidity, while 40.88% had no morbidity. Respiratory conditions were the most frequent (44.03%), followed by gastrointestinal problems (05.66%), ear-related complaints (02.52%), skin conditions (02.52%), dental issues (01.89%), injuries/wounds (01.89%), and neurological problems (00.63%). Children living in slums are 1.3 times more likely to suffer from diarrhea than those in non-slum areas.<sup>1</sup> A study conducted in a Mumbai slum found a prevalence rate of 14.80% for common psychiatric illnesses in children aged 5 to 14 years, which included behavioral disorders, attention-deficit hyperactivity disorder, intellectual disability and depression.<sup>5</sup>

In the present study, morbidity status did not show any statistically significant association with gender, age, religion, or class. But morbidity was slightly higher among males (59.74%) compared to females (58.54%), and among children aged 3-4 years (61.82%) compared to those aged 5-6 years (53.06%). Morbidity prevalence was higher in Hindu

children (64.29%) compared to non-Hindu children (55.06%). Across classes, morbidity was most common in Junior Kindergarten (71.43%), followed by Nursery (52.83%) and Senior Kindergarten (52.00%). However, these differences were not statistically significant ( $p > 0.05$ ).

Sarkar R. et al<sup>6</sup> in their study in a semi-urban slum in southern India observed a total of 3932 episodes of illness were recorded during the follow-up period, resulting in an incidence of 12.5 illness/child-year, with more illness during infancy than in the second year of life. Upper respiratory infections and gastrointestinal illnesses were most common. This study highlighted a high burden of childhood diseases and malnutrition among urban slum dwellers in southern India. Frequent health problems among children may adversely impact children's health and development, besides placing an additional burden on families who need to seek health care services and find resources to manage diseases.

Shrivastava R. et al<sup>9</sup> in their study in urban slum in Sagar city observed more than 80.00% children were suffering from skin and hair problems and other signs of malnutrition. 50.00% children were malnourished out of that 13.36% were having third degree malnutrition. Children's health status in slums with inadequate services is worse in comparison to relatively better served slums. Identification, mapping and assessment of all slums is important for locating the hitherto missed out slum pockets and focusing on the neediest slum pockets.<sup>10</sup> Singh Jasmeet et al<sup>11</sup> in their study among

under-5 slum dwellers of Amritsar city observed, 69.00% children suffered from one or more infectious disease in last 3 months. In total 79.00% children had anemia. This highlights on addressal of health needs of under-5 children residing in urban slums.

## CONCLUSIONS

Our study highlights a substantial burden of morbidity among children residing in urban slums. Rigorous strengthening and conceptualization of on-ground pediatrics primary health care services targeted towards slum children should be done by the health care policymakers and services. Health education related to pediatric morbidity and its prevention and control at community level should be given priority.

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